DOCUMENT RESUME

ED 022 283 24 EC 002 161

By-Mann, Philip H.

AN INVESTIGATION OF THE EFFECT OF GROUP COUNSELING ON EDUCABLE MENTALLY RETARDED BOYS' CONCEPTS OF THEMSELVES IN SCHOOL.

Spons Agency-Office of Education (DHEW), Washington, D.C.
Bureau No-BR-7-C-014
Pub Date 67
Note-82p.
EDRS Price MF-$0.50 HC-$3.36
Descriptors-ACADEMIC ACHIEVEMENT, *ACHIEVEMENT, ANXIETY, ARITHMETIC, *BEHAVIOR, BEHAVIOR CHANGE, CLASS ATTENDANCE, *COUNSELING, COUNSELING EFFECTIVENESS, EDUCABLE MENTALLY HANDICAPPED, *EXCEPTIONAL CHILD RESEARCH, GROUP COUNSELING, *MENTALLY HANDICAPPED, RATING SCALES, READING, SELF CONCEPT

The effects of group counseling on the self concepts and behavior of educable mentally retarded boys in the public schools were studied in two groups of 18 boys each with behavior problems (ages 9 to 13, IQ's 56 to 80). The variables of anxiety, achievement in reading and arithmetic, deportment, and attendance were also examined. Once a week for 12 weeks, the experimental group received group counseling while the control group received a library study situation. Both groups were administered two self concept scales and one anxiety scale and were rated by teachers on reading, deportment, and arithmetic. Results indicated that the experimental group scored significantly higher ($p=.05$) on The Children's Self Concept Scale, exhibited greater anxiety reduction as measured by The Children's Manifest Anxiety Scale ($p=.05$), received higher teacher ratings for reading and arithmetic ($p=.05$) and for deportment ($p>.05$). There were no significant differences between the groups on The Way I Feel About Myself Scale or in attendance, nor were any significant differences found for any of the three tests comparing the upper and lower 50% of the experimental group by age and IQ. (MY)

7-C-014-24. 1/26/62

MAR 7 1968

An Investigation of

THE EFFECT OF GROUP COUNSELING ON EDUCABLE MENTALLY RETARDED BOYS' CONCEPTS OF THEMSELVES IN SCHOOL

Philip H. Mann, Ed. D.

June 15, 1967 - November 15, 1967

The research reported herein was performed pursuant to Contract 7-C-014 with the United States Office of Education, Department of Health, Education and Welfare.

1967

ED022283

EC 002 767

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

An Investigation of

THE EFFECT OF GROUP COUNSELING ON EDUCABLE MENTALLY RETARDED BOYS' CONCEPTS OF THEMSELVES IN SCHOOL

Philip H. Mann, Ed. D.

June 15, 1967 - November 15, 1967

The research reported herein was performed pursuant to Contract 7-C-014 with the United States Office of Education, Department of Health, Education and Welfare.

1967

ACKNOWLEDGEMENTS

The project director welcomes this opportunity to express his gratitude to the teachers and staff of the McGuffey School in Charlottesville, Virginia for their cooperation in this study. Special thanks is extended to the principal, Mr. Guy Dirom for his aid in making special arrangements and to Dr. Edward Rushton, Superintendent of Schools, for his cooperation in permitting the use of the public schools for this project.

Appreciation is due to Dr. James D. Beaber, Sponsor of this project for his cooperation and patient encouragement in the development of this study.

Grateful acknowledgement is made to Doctors Leonard T. Curtis, Frank McMillan, and Paul B. Walter for their helpful suggestions.

A special acknowledgement is due Dr. Milton D. Jacobson for his aid in the statistical analysis.

Finally, this investigator would like to express sincere appreciation to Dean Ralph W. Cherry for his guidance and for making available the facilities of the School of Education for this research.

TABLE OF CONTENTS

		Page
ACKNOWLEDGEMENTS		ii
LIST OF TABLES		v
Chapter		
I.	STATEMENT OF THE PROBLEM	1
	Introduction	1
	The Problem	3
II.	SURVEY OF THE LITERATURE	4
	Counseling and the Mentally Retarded	5
	Purpose of the Study	9
	Definition of Terms	10
	Statement of Hypotheses	11
III.	EXPERIMENTAL PROCEDURES	14
	Selection of the Sample	14
	Procedure	14
	Measuring Instruments	16
	Description of Measuring Instruments	17
	Duration of Study	21
	Experimental Plan	22
	Comparison of the Subjects	22
IV.	RESULTS	25
	Analysis of the Data	25
	Statistical Analysis	25
V.	SUMMARY AND DISCUSSION	41
	Summary	41
	Group Counseling	46
	Discussion	49
APPENDIX		51
BIBLIOGRAPHY		73

LIST OF TABLES

Table — Page

1. Subject Reference Data of the Experimental (Counseled) Group A and the Control (Non-Counseled) Group B 23

2. Analysis of Variance for The Children's Self Concept Scale: Discrepancy Scores 28

3. Analysis of Variance for The Way I Feel About Myself Scale: Discrepancy Scores 28

4. Analysis of Variance for The Children's Manifest Anxiety Scale: Discrepancy Scores 29

5. Analysis of Variance for Ratings by Teachers on The Variable of Reading: Discrepancy Scores 31

6. Critical Ratio or *t* Test for Ratings by Teachers on The Variable of Arithmetic: Discrepancy Scores 31

7. Analysis of Variance for Ratings by Teachers on The Variable of Deportment: Discrepancy Scores 32

8. Analysis of Variance for Attendance: Discrepancy Scores 33

9. Analysis of Variance Between Upper and Lower I.Q. Groups on The Children's Self Concept Scale: Discrepancy Scores 34

10. Analysis of Variance Between Upper and Lower I.Q. Groups on The Children's Manifest Anxiety Scale: Discrepancy Scores 35

11. Analysis of Variance Between Upper and Lower I.Q. Groups on The Way I Feel About Myself Scale: Discrepancy Scores 37

12. Analysis of Variance Between Upper and Lower Age Groups on The Children's Self Concept Scale: Discrepancy Scores 38

Table Page

13. Analysis of Variance Between Upper and Lower Age Groups on The Way I Feel About Myself Scale: Discrepancy Scores 39

14. Analysis of Variance Between Upper and Lower Age Groups on The Children's Manifest Anxiety Scale: Discrepancy Scores 40

Table | Page

13. Analysis of Variance Between Upper and Lower Age Groups on The Way I Feel About Myself Scale: Discrepancy Scores 39

14. Analysis of Variance Between Upper and Lower Age Groups on The Children's Manifest Anxiety Scale: Discrepancy Scores 40

CHAPTER I

STATEMENT OF THE PROBLEM

Introduction

The school has more and more taken the responsibility for helping each child achieve optimum growth and effective adjustment within a dynamic social structure. The challenge has to be met by all involved in the process of educating the handicapped child. This includes administrators, teachers and all others providing for ancillary services.

Special educators are becoming increasingly aware of the importance of such factors as social and personal adjustment and how they effect the learning situation. One of the underlying assumptions is that adjustment in terms of a good self concept as it relates to school is a necessary criterion for optimal learning.

Counseling services for the retarded child have been conspicuously lacking in special programs. In the past, the guidance personnel were not considered part of special education teams and even today this service is mainly provided by the school psychologist.

Many definitions of mental retardation have been postulated. In reviewing these, it was found that disagreement exists as to which area of this phenomenon deserves special emphasis. Some stress the biological factors, others are mainly concerned with cultural environmental factors and some attempt to integrate the two into an operational

definition implying that both are critical, but we do not as yet know exactly the contribution of each.

Since disagreement exists concerning the exact nature of mental retardation, it must be concluded that present diagnostic procedures are operating within a somewhat nebulous construct. While many accept the fact that our diagnostic instruments today are far from being completely adequate, some educators still continue to treat intelligence test scores as though they were infallible. Emphasis on intellectual factors on the part of many educators has resulted in many cases in a parenthetical interest in personality factors.. By concentrating on intellectual factors alone, sight is lost of the fact that the mentally handicapped individual is not only a problem of intellect, but also a part of a dynamic environment which also involves affective interaction.

Research with normal I.Q. children (McLaughlin;[1] Broedel and Ohlsen,[2] Caplan)[3] has indicatod that students who receive the benefit

---

[1]Edward F. McLaughlin, "A Study of tho Effectiveness of Personal Counseling with Seventh Grade Pupils," Dissertation Abstract, 16, 2089 (1956).

[2]John Broedel, M. M. Ohlsen, and Fred Proff, "The Effects of Group Counseling on Gifted Adolescent Underachievers," Journal of Counseling Psychology, 7 (1960), pp. 163-170.

[3]Stanley W. Caplan, "Tho Effect of Group Counseling on Junior High School Boys' Concepts of Themselves in School," Journal of Counseling Psychology, 4 (1957), pp. 124-128.

of special group counseling beyond the classroom are better adjusted individuals in terms of school orientation, self concept and attitudes toward school than those who do not receive this service.

In many school situations counseling is limited to the "normal" population and the special education teacher bears the full responsibility for counseling his own students.

A review of the literature indicated a need for research concerning counseling as it relates to self concept modification in the mentally handicapped.

The Problem

The problem was to determine whether or not extra classroom group counseling had an effect on the concepts that educable mentally handicapped boys have of themselves in school.

In addition to self concept, this study was also concerned with the effects of counseling on the variables of anxiety, academics i.e.; reading and arithmetic, deportment, attendance, age, and I.Q.

This study was designed to examine the effects of group counseling on mentally handicapped boys.

CHAPTER II

SURVEY OF THE LITERATURE

According to Wiest[1] there has been some disagreement as to the feasability of psychotherapy with mentally handicapped children. Workers in the field of mental deficiency have been skeptical about the use of psychotherapy because they have thought mainly of depth analysis and have largely disregarded the use of systematic, theraputic counseling.

Sarason in summarizing the difficulties faced by the therapist states that "retarded patients have been considered unable to delay or control emotional expression; to seek or to accept socially appropriate substitute activities in the face of frustrations and restrictions; to view objectively the behavior of others; to verbalize the interpersonal nature of their problems; to seek help or to understand the purpose of the individual offering it. It must, however, be pointed out that many of these opinions derive from prior concepts of mental deficiency and have been based more on deductions from theoretical considerations than on systematic research findings".[2]

A review of the literature indicated that most of the studies concerned with retardates in a counseling situation were done in institutional settings and made use of small samples.

---

[1]Glenn K. Wiest, "Psychotherapy with the Mentally Retarded," American Journal of Mental Deficiency, 59 (1955), pp. 640-644.

[2]Seymore B. Sarason, Psychological Problems in Mental Deficiency, 2nd. edition (New York: Harper, 1953), pp. 463-464.

Slavson[1] concluded after comparing the results of treatment for bright and dull children that therapy with those of lower mentality is as favorable as those of higher mentality.

Snyder and Sechrest[2] working with 16 retardates, mean C.A. 19 and mean I.Q. 62, in a directive group counseling situation for 13 one hour sessions reported statistically significant differences between experimental and control groups showing superior institutional adjustment for the former.

Wilcox and Guthrie[3] found statistically significant differences between control and experimental groups of institutional retardates, intelligence range 53-90, in a discussion group directed counseling situation. The group sessions were for one hour, three times a week, for a total of 12 sessions.

Thorne[4] used a directive approach to counseling in an institutional setting with retarded persons. The 68 subjects (38 female,

---

[1]Samuel R. Slavson, Analytic Group Therapy with Children, Adolescents, and Adults (New York: Columbia University Press, 1950).

[2]Robert Snyder and Lee Sechrest, "An Experimental Study of Directive Group Therapy with Defective Delinquents," American Journal of Mental Deficiency, 64 (1959), pp. 117-123.

[3]George T. Wilcox and George M. Guthrie, "Changes in Adjustment of Institutionalized Female Defectives Following Group Psychotherapy," Journal of Clinical Psychology, 13 (1957), pp. 9-13.

[4]Frederick C. Thorne, "Counseling and Psychotherapy with Mental Defectives," American Journal of Mental Deficiency, 52 (1948), pp. 263-271.

30 male) were composed of 17 imbeciles, 41 morons, and 9 borderline individuals. The chronological age range was 9 years through 49 years. Techniques such as reassurance, persuasion, advice, and suggestions were used. The basis for evaluation of therapy was breaches of discipline, school and work records and clinical reports.

Thorne reported the following results:

a. 66% of the group rated improved
b. 23% of the group rated unchanged
c. 10% of the group became worse

Cotzin[1] counseled 9 mentally retarded boys at the Southberry Training School in a group situation. Their chronological ages were between 11 years 6 months and 14 years 11 months, I.Q.'s between 50 and 79. These boys were identified as problem youngsters and were repeatedly referred to the Department of Psychological Services for psychotherapy.

Ten theraputic sessions were held over a three week period, each session lasted for one hour and fifteen minutes. The first meeting was nondirective and Cotzin reports that "it was an almost unmanageable affair". After changing to a directive structured approach for the remaining sessions, the following results were reported:

a. definite improvement took place in the behavior and personality of all the children during two months following the group meetings.
b. 6 out of 9 followed up for one year maintained improvement.

The evaluations were made on the basis of clinical judgement.

---

[1]Milton Cotzin, "Group Psychotherapy with Mentally Defective Problem Boys," Counseling and Psychotherapy with the Mentally Retarded, ed. Chalmers L. Stacey and Manfred F. DeMartino (Glencoe, Illinois: The Free Press, 1957), pp. 169-186.

O'Connor and Yonge[1] used a nondirective permissive, but not passive therapist approach with 7 male retarded delinquents for 32 one hour sessions. The chronological ages were between 7 and 10, I.Q.'s between 50 and 80. Assessments included a check list of attitudes, objective measurement of workshop behavior, and psychometric tests. They found significant changes in attitudes, improvement in work, and significant increase in I.Q. rating of the experimental group over the two control groups.

Fisher and Wolfson[2] reported improvement in behavior and attitudes in 8 out of 12 retarded girls, chronological age between 10 and 13, mental ages between 5 and 8 at the Newark State School. They used the "activity interview" technique for 36 sessions and permitted discussion and interpretation by patients with a somewhat passive counselor.

Mehlman[3] found significant increases in adjustment ratings, but no change in intelligence quotients of 32 institutionalized familial defectives who had been exposed to 16 weeks of nondirective

---

[1]N. O'Connor and K. A. Yonge, "Methods of Evaluating the Group Psychotherapy of Unstable Defective Delinquents," Journal of Genetic Psychology, 87, (1956), pp. 89-101.

[2]Louise A. Fisher and Isaac N. Wolfson, "Group Therapy of Mental Defectives," American Journal of Mental Deficiency, 57 (1953), pp. 463-476.

[3]Benjamin Mehlman, "Group Psychotherapy with Mentally Retarded Children," Journal of Abnormal and Social Psychology, 48 (1953), pp. 53-60.

play therapy. The chronological age range was between 7 and 12, I.Q.'s between 52 and 78. The sessions were held twice a week for 50 minutes.

Studies by Astrachan;[1] Stubblebine and Roadruck[2] also indicated improvement in attitudes and general behavior of mental retardates as a result of group therapy.

Clarke and Clarke summarize the major published reports dealing with group therapy by stating that "group sessions provide an opportunity to relieve situational anxiety caused by misunderstood, or only half-understood happenings. Questions freely answered by the therapist provide an opportunity for disseminating information, counteracting disturbing rumors, and for utilizing institutional incidents for concrete demonstrations of community demands and regulations. They make it possible to clarify misunderstandings on the spot, to dispel

---

[1]Myrtle A. Astrachan, "Group Psychotherapy with Mentally Retarded Female Adolescents and Adults," American Journal of Mental Deficiency, 60 (1955), pp. 152-156.

[2]James Stubblebine and Roscoe D. Roadruck, "Treatment Program for Mentally Deficient Adolescents," American Journal of Mental Deficiency, 60 (1956), pp. 552-556.

doubts, to reassure the insecure and to suggest solutions to the hesitant."[1] (Ringelheim and Polatsek,[2] Kaldeck,[3] Morris et al.[4]

Purpose of the Study

Counseling in the past has been directed toward effecting solutions to problems associated with adaptation as they occur in day to day situations. Much of the benefit accrued has been in solving practical problems directly concerned with daily school life. A review of the literature, by this investigator, indicated a need for research which explored the effect of group counseling on the self concepts of special class educable mentally handicapped youngsters in the public schools.

It was the purpose of this study to attempt to effect a change in the concepts that educable mentally retarded boys have of themselves in school through group counseling procedures.

---

[1]Ann M. Clarke and A. D. B. Clarke, Mental Deficiency, The Changing Outlook, 2nd ed. (New York: The Free Press, 1965).

[2]Daniel Ringelheim and Irwin B. Polatsek, "Group Therapy with a Male Defective Group," American Journal of Mental Deficiency, 49 (1955), pp. 300-303.

[3]Rudolph Kaldeck, "Group Psychotherapy with Mentally Defective Adolescents and Adults," International Journal of Group Psychotherapy, 8 (1958), pp. 185-193.

[4]Christopher C. Morris, Barbara Nellis and Charles E. Stromberg, "The Development of an Inter-disciplinary Psychotherapeutic Program in an Institution for the Mentally Retarded," American Journal of Mental Deficiency, 63 (1959), pp. 605-610.

Definition of Terms

Educable Mentally Handicapped

Educable mentally handicapped students were defined as those students who scored within the range of 50-80 on the Wechsler Intelligence Scale for Children and/or the L-M Form of the Stanford-Binet Intelligence Scale and who are currently enrolled in special education.

Self Concept

For the purpose of this study, the term self concept was used as suggested by Rogers to mean: "an organized configuration of the perceptions of the self which are admissible to awareness. It is composed of such elements as the perceptions of one's characteristics and abilities; the percepts and concepts of the self in relation to others and to the environment; the value qualities which are perceived as associated with experiences and objectives; and goals and ideals which are perceived as having positive or negative valences."[1]

Group Counseling

For the purposes of this study, group counseling was defined as counseling with more than one individual in a structured but permissive situation in which directive discussion emphasized the following areas:

a. home and family life as it affects school behavior

b. peer group relationships both in and out of school

c. relationships with authority figures

d. attitudes toward academics

e. attitudes toward self

f. techniques: discussion, sharing, role playing

---

[1]Carl R. Rogers, Client-Centered Therapy (Boston: Houghton-Mifflin Co., 1951), p. 501.

A social situation was instituted which allowed the individual through interaction with the group and immediate feedback an opportunity to gain insight into possible solutions to problems.

Froehlich defined group counseling as "counseling with more than one individual at a time, but with each on a cooperate basis. The group counseling situation will emphasize a permissive but directive relationship in which each individual can evaluate himself and the opportunities presented within his environment."[1]

Statement of the Hypotheses

The following are the specific hypotheses which were proposed for the study:

H_1: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in terms of a more positive concept of themselves in school as measured by discrepancy scores, pre- and post-test, on The Children's Self Concept Scale.

H2: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in terms of a more positive concept of themselves in school as measured by discrepancy scores, pre- and post-test, on The Way I Feel About Myself Scale.

H_3: Among educable mentally handicapped boys, those that receive group counseling will exhibit more anxiety reduction during the period of counseling as measured by discrepancy scores, pre- and post-test, on The Children's Manifest Anxiety Scale.

---

[1]Clifford P. Froehlich, "Must Counseling be Individual?", Education and Psychological Measurement (in press).

H_4: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in academic subjects; arithmetic, and reading on comparisons made from pre- to post-counseling.

H_5: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in department (conduct) on comparisons made from pre- to post-counseling.

H_6: Among educable mentally handicapped boys, those that receive group counseling will exhibit better attendance records on comparisons made from pre- to post-counseling.

H_7: Among educable mentally handicapped boys who receive group counseling sessions, there will be no difference between the upper 50 per cent and the lower 50 per cent of the group (based on I.Q.) on discrepancy scores, pre-test post-test, as measured by The Children's Self Concept Scale.

H_8: Among educable mentally handicapped boys who receive counseling sessions, there will be no difference between the upper 50 per cent and the lower 50 per cent of the group (based on I.Q.) on discrepancy scores, pre-test post-test as measured by The Children's Manifest Anxiety Scale.

H_9: Among educable mentally handicapped boys who receive group counseling sessions, there will be no difference between the upper 50 per cent and the lower 50 per cent of the group (based on I.Q.) on discrepancy scores, pre-test post-test, as measured by The Way I Feel About Myself Scale.

H_{10}: Among educable mentally handicapped boys who receive group counseling there will be no difference between the upper 50 per cent and the lower 50 per cent of the group (based on age) on discrepancy scores, pre-test post-test as measured by The Children's Self Concept Scale.

H_{11}: Among educable mentally handicapped boys who receive group counseling there will be no difference between the upper 50 per cent and the lower 50 per cent of the group (based on age) on discrepancy scores, pre-test post-test as measured by The Way I Feel About Myself Scale.

H_{12}: Among educable mentally handicapped boys who receive group counseling there will be no difference between the upper 50 per cent and the lower 50 per cent of the group (based on age) on discrepancy scores, pre-test post-test as measured by The Children's Manifest Anxiety Scale.

CHAPTER III

EXPERIMENTAL PROCEDURE

Selection of the Sample

Thirty-six educable mentally handicapped boys were selected for this study. The sample was selected from boys currently enrolled in public school special education classes in Charlottesville, Virginia and identified by teachers as behavior problems on a behavior rating scale.

The chronological ages of the subjects were nine through thirteen, the intelligence range between 56 and 80.

The 36 subjects comprised two groups (A and B) of 18 each that were matched on the basis of chronological age, I.Q., race, and socio-economic status. With reference to race, 12 subjects were white and 24 were Negro.

Procedure

All subjects in this study who had not been tested with the Wechsler Intelligence Scale for Children or the L-M Form of the Stanford-Binet Intelligence Scale for two years previous to the study were re-tested using the Wechsler Intelligence Scale for Children.

The subjects were then administratively assigned to six sub-groups; 3 experimental (group A) and 3 control (group B).

All the subjects in the study received a pretest with two self concept scales, and an anxiety measurement. This was done in small

groups consisting mainly of six students in each and was carefully proctored to insure that all subjects understood the testing procedure. A few absentees were tested in small groups immediately after the initial testing. One student left the experimental group after seven sessions, but was tested before leaving.

Information needed to determine socioeconomic status such as father's occupation, income, dwelling area, and house type was taken from permanent records, this year's registration forms, administrators, teachers who had made home visits, and when necessary, home visits made by the principal investigator.

Teachers were asked to rate each subject at the beginning of the study and then again at the conclusion of the study on the variables of department (conduct), reading, and arithmetic. The students were rated on a 5 point scale from A to F.

The investigator with the aid of the school secretary, computed the days absent for each student for a 12 week period prior to the study and then again for the 12 week period of the duration of the study.

The study investigated the following variables:

1. self concept
2. anxiety
3. academic record (reading and arithmetic)
4. attendance record
5. department
6. I.Q.
7. age

Testing

The instructions and explanations of the purpose of the testing was the same in each of the testing situations (See Appendix A) and followed the recommended instructions of the test authors. The order of testing was:

1. The Way I Feel About Myself
2. The Children's Manifest Anxiety Scale
3. The Children's Self Concept Scale

All questions were read to the subjects in order to insure that reading ability would not be a factor in the testing procedure. The test authors followed this procedure in the standardization process.

Measuring Instruments

1. Measurement of I.Q. was taken from the permanent record files and the most recent individual psychological (Wechsler Intelligence Scale for Children or the L-M Form of the Stanford-Binet Intelligence Scale) was used. In cases where no psychological evaluation had been made for two years previous to the study with the Wechsler Intelligence Scale for Children or the L-M Form of the Stanford-Binet Intelligence Scale, the subjects were retested using the Wechsler Intelligence Scale for Children.
2. Socioeconomic status was determined by the revised Index of Status Characteristics.[1]

---

[1] W. Floyd Warner, Marchia Meeker and Kenneth Eells, Social Class in America (New York: Harper & Row, 1960), pp. 121-58.

3. Two self concept scales were used in this study. These two instruments were: The Way I Feel About Myself Scale[1] and the Children's Self Concept Scale.[2] Copies of these tests and instructions for administering them are contained in Appendix B.
4. Level of anxiety was measured by the Children's Manifest Anxiety Scale.[3] A copy of this test and instructions for administering it are contained in Appendix B.
5. Pupils with behavior problems were chosen by a preset cut off score on the Pupil Behavior Rating Scale.[4]

Description of Major Measuring Instruments

The Warner Index of Status Characteristics[5] has four components:

1. occupations
2. source of income

---

[1]Ellon V. Piers and Dale B. Harris, "Age and Other Correlates of Self Concept in Children," Journal of Educational Psychology, LV (1964), pp. 91-95.

[2]Lewis B. Lipsitt, "A Self-Concept Scale for Children and Its Relationship to The Children's Form of the Manifest Anxiety Scale," Child Development, XXIX (1958), pp. 463-472.

[3]Alfred Castaneda, Boyd R. McCandless and David S. Palermo, "The Children's Form of the Manifest Anxiety Scale," Child Development, Vol. 27, No. 3 (September, 1956), pp. 318-326.

[4]Eli M. Bower, Early Identification of Emotionally Handicapped Children in School (Springfield, Illinois: Charles Thomas, Publisher, 1960).

[5]Warner, Meeker and Eells, op. cit., p. 124.

3. type of house

4. area lived in

A person is ranked on a 1-7 continuum on each of the four components or categories. The weighted sum of the components is the final status score. The following weights are used: occupation 4, source of income and house type 3 each, and area lived in 2. Scores may range from 12 (highest socioeconomic status) to 84 (the lowest socioeconomic status). The authors of this instrument have indicated that research has shown it to be a valid measure of socioeconomic status.

In recent years, many measures of self concept have been developed and used in various studies. In general, these tests can be classified under one of four categories:

1. Q technique

2. Likert type technique

3. Semi-projective type devices

4. Check list devices

Many of these scales were developed for use with adults and contained a vocabulary which made them unsuitable for children. It was necessary to find instruments that could not only be applied to children, in general, but also to mentally retarded children. The concepts could not be of too abstract a nature. After surveying many different scales, two were found that could be used effectively with educable mentally handicapped children. The Children's Self Concept Scale and The Way I Feel About Myself Scale were recently used by Lamar Mayer in a study concerning self concept and early class placement using mentally

handicapped children. He reports that "these scales provide a reliable measure of the same variable."[1]

The Children's Self Concept Scale developed by Lipsitt[2] was standardized on a population of 298 fourth, fifth, and sixth grade students. The test retest reliability correlations by sex and by grade varied from .73 to .91. This was reported to be significant at the .01 level of confidence.

Horowitz[3] using this scale in a recent study with 111 subjects found a test retest correlation of .89.

The entire group mean score was 86.75 with a standard deviation of 8.18 resulting, as suggested by the authors, in an essentially normal distribution. An analysis of variance indicated that neither the effects of grade nor the interaction of the two resulted in a significant difference in score.

The scale is comprised of 22 trait descriptive adjectives; 19 of which are rated positive and 3 are rated negative. Each subject rates himself on a five point scale ranging from "not at all" to "all the time."

---

[1]C. Lamar Mayor, "A Study of the Relationship of Early Special Class Placement and the Self Concepts of Mentally Handicapped Children," Exceptional Children (October, 1966).

[2]Lipsitt, op. cit.

[3]Frances D. Horowitz, "The Relationship of Anxiety, Self Concept, and Sociometric Status Among Fourth, Fifth and Sixth Grade Children," Journal of Abnormal and Social Psychology, LX (1962), pp. 212-214.

The Way I Feel About Myself Scale developed by Piers and Harris[1] was standardized on a population of 457 students covering a wide range. Eighty-eight of the subjects were institutionalized retardates and the remainder were fourth, sixth, and tenth grade public school students. The authors indicated that a cross section of socioeconomic levels was used in the standardization process. Test retest correlations were found to be .72 at the third and tenth grade levels and .71 at the sixth grade level. The Kuder-Richardson Formula used to test internal consistency by grade and by sex showed a correlation of from .78 to .93.

This general measure of self concept contains 80 items which are simple declarative statements concerning the self which the subject answers by circling a "yes" or "no". The statements are worded so that a positive self concept may sometimes be indicated by a "yes" answer and sometimes by a "no" answer. Each person is scored on the basis of the number of responses he makes which indicates a positive self concept.

The Children's Form of the Manifest Anxiety Scale developed by Castaneda, McCandless and Palermo[2] was adapted from Taylor's adult form for use with children. It was standardized on 361 fourth, fifth, and sixth graders representing 15 classrooms and 4 different schools.

---

[1]Piers and Harris, op. cit.

[2]Castaneda, McCandless and Palermo, op. cit.

The effects of grade and interaction between sexes and grades was not found to be significant. The mean of the distribution for girls was 18.45 and 15.87 for boys. One week retest reliabilities averaged about .90. This test consists of a 42 item anxiety scale which the subject answers by circling a "yes" or "no" for each item. The index of the level of anxiety is obtained by summing the number of specified items marked "yes".

The Pupil Behavior Rating Scale developed by Bowers[1] consists of descriptions of classroom behavior which the teacher evaluates on a 5 point scale. A higher score on this test is suggestive of poor behavior in school.

Duration of Study

The study took place during the winter and spring of 1966-67. All tests were administered by the principal investigator with the aid of a research assistant. Tests were administered in groups of six except in a few cases where absentees were tested in small groups after the initial groups were assessed. One subject left the experimental group after seven counseling sessions and was tested (post test) before leaving.

The total testing time for each student was approximately 60 minutes. It should be noted, however, that no time limit was set and that each subject was given as much time as needed.

---

[1]Bowers, op. cit.

Experimental Plan

Two matched groups; Group A (experimental) and Group B (control) were administratively subdivided into 3 subgroups for each. The six subgroups then spent equal time with the principal investigator over a period of 12 weeks.

The three subgroups in group A received 12 group counseling sessions with the principal investigator who acted as counselor over a 12 week period. These sessions were held in the same place each time. Makeup sessions were held for those subjects who were absent for the regularly scheduled meetings.

The 3 subgroups in group B received 12 library sessions with the principal investigator consisting of supervised reading and study. A minimum of personal interaction took place between the control subjects and the investigator.

Comparison of the Subjects

The experimental and control groups were matched on the basis of chronological age, intelligence, and socioeconomic status.

The chronological age range of the experimental group was 115 months to 167 months with a mean chronological age of 143.17 months. The chronological age range of the control group was 117 months to 167 months with a mean chronological age of 143.94 months.

Using the Critical Ratio to test the significance between the two means, the findings indicate a t of .15. The t at the .05 level for 34 degrees of freedom is equal to 2.03. The significance of the

difference between the two SD's was determined by the F test; through the use of variances. The observed F of 1.05 is below the F at the .05 level of confidence. There is no evidence, therefore, that the experimental group and the control group differ in variability and as a result it was concluded that they were matched on the basis of chronological age. Subject reference data is given in Table I.

TABLE 1

SUBJECT REFERENCE DATA OF THE EXPERIMENTAL (COUNSELED) GROUP A AND THE CONTROL (NON-COUNSELED) GROUP B

Variable	A	B	Combined
Number	18	18	36
Chronological Age*			
M	143.17	143.94	143.56
	17.55	16.64	16.79
IQ			
M	68.33	66.22	67.28
	7.07	8.77	8.06
Social Status			
M	62.28	62.20	62.24
	7.68	8.71	8.07
Sex			
Male	18	18	36
Female	0	0	0

*Reported in months.

The range of intelligence scores for the experimental group was from 56 to 80 with a mean of 68.33. The I.Q. scores for the control group ranged from 50 to 80 with a mean of 66.22. Using the Critical

Ratio to test the significance between the two means the findings indicated a *t* of .09. The *t* at the .05 level for 34 degrees of freedom is equal to 2.03. The *F* test was used to determine the significance between the two SD's. The observed *F* of 1.54 is below the *F* at the .05 level of confidence. It was concluded on the basis of these results that the experimental and control groups were matched in I.Q. (See Table 1.)

The socioeconomic status range of scores for the experimental group was from 38 to 71 with a mean of 62.28. The range of scores in the socioeconomic variable for the control group was from 44 to 71 with a mean of 62.20.

Using the Critical Ratio to test the significance between the two means the findings indicated a *t* of .003. The *t* at the .05 level for 34 degrees of freedom is equal to 2.03.

The significance of the difference between the two SD's was determined by the *F* test, through the use of variances. The observed *F* of 1.28 is considerably below the *F* at the .05 level of confidence. There is no evidence, therefore, that the experimental group and the control group differ in variability and as a result it was concluded that they were matched in socioeconomic status (See Table 1.)

CHAPTER IV

RESULTS

Analysis of the Data

The basic design of the study included both pre test and post test for all of the criterion variables. Discrepancy scores were used to evaluate the relative effectiveness of the treatments.

Chapter IV presents an analysis of the results of the following groups:

1. Between group A; the counseled group, and group B; the noncounseled group on the variables of self concept, anxiety, reading, arithmetic, deportment, and attendance.
2. Within group A on the variables of self concept, anxiety, age, and I.Q.

Statistical Analysis

The statistical analysis involved in this study was carried out on the Burroughs B5500 Electronic Computer which utilizes a multiple linear regression technique based on a program developed by Bottenberg and Ward.[1]

The statistical program is set up to do both analysis of variance and co-variance. Each of the criterion variables was analyzed in accordance with the hypothesos specified in Chapter II.

---

[1]Robert A. Bottenberg and Joe H. Ward, Jr. Applied Multiple Linear Regression (Lackland Air Force Base, Texas 65 70th Personnel Research Laboratory, Aerospace Medical Division, March, 1963) (PKL-TDR-63-6).

A Full Model[1] was written which contained both categorical and numerical vectors for the critorion variables. A restricted model was thon written for each of the variables under consideration in this study. In this process, often the deleted variable is considered while all other variables in the Full Model are held constant. (Exceptions occur when continuous variables are co-varied). The operations involved here are analogous to the analysis of variance in which the source of variation is comprised of the deleted variable(s) and the variables that are included comprise the ones that are co-varied.

The Computational formula of the $\underline{F}$ value is based on the following formula:

$$F = \frac{(RSQ_F - RSQ_R)\ /df1}{(1-RSQ_F)\ /df_2}$$

RSQ_F = "minimized error sum of squares obtained from an attempt to express the observed values in vector y as a linear combination of an unrestricted set of predictors."

RSQ_R = "minimized error sum of squares obtained from an attempt to express observed values in vector y as a linear combination of a restricted set of predictors that express an hypothesis."

df_1 = "a number related to (and sometimes equal to) the difference between the number of unknown parameters to be estimated in the unrestricted linear combination."

---

[1]The formulation of models and the analyses of treatment effects when concommitant variables are not influenced by treatment and when they are influenced by treatment are given in the appendix.

df_2 = "a number related to (and sometimes equal to) the difference between the number of elements in the vectors and number of unknown parameters to be estimated in the restricted linear combination."[1]

In the case of arithmetic, significant interaction was obtained with the computer program. As a result, for this variable alone, a critical ratio or t test was used for testing the significance between means of correlated measures.[2]

H_1 Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in terms of a more positive concept of themselves in school as measured by discrepancy scores, pre and post test, on The Children's Self Concept Scale.

The Children's Self Concept Scale[3] mean discrepancy score was 12.444 for group A and -.944 for group B.

The results of this scale were analyzed for the two groups in accordance with the above stated hypothesis. The obtained F value of 5.2746 was found to be significant at the .05 level of confidence and the null hypothesis was rejected in this case. These results support the contention of the investigator's hypothesis that among educable mentally handicapped boys, those who receive group counseling tend to benefit more from those procedures in terms of a more positive self concept than those who do not receive this service. Table 2 contains the results of the analysis.

---

[1] Robert A. Bottenberg and Joe H. Ward, Jr., op. cit. p. 47.

[2] Palmer O. Johnson, Statistical Methods in Research (New York: Prentice Hall, Inc., 1949), pp. 77-78.

[3] Lipsitt, op. cit.

TABLE 2

ANALYSIS OF VARIANCE FOR THE CHILDREN'S SELF CONCEPT SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-6, 17 46-47	.2680	1	5.2746[b]
Restricted Model	1-6,17	.1301	28	

[a]The Continuous and Categorical variable numbers used as predictors. (Deleted variables are the source of variation)

[b]Significance >.05 level. (F .05 = 4.20)

H_2 Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in terms of a more positive concept of themselves in school as measured by discrepancy scores, pre and post test, on The Way I Feel About Myself Scale.

The mean discrepancy score yielded by The Way I Feel About Myself Scale[1] was 6.555 for group A and .333 for group B.

The results of the analysis between the two groups on this scale can be found in Table 3. The analysis of variance of the ratio

TABLE 3

ANALYSIS OF VARIANCE FOR THE WAY I FEEL ABOUT MYSELF SCALE: DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-6,7 46-47	.4278	1	1.5882[b]
Restricted Model	1-3,5-6 7, 46-47	.3953	28	

[a]The Continuous and Categorical variable numbers used as predictors. (Deleted variables are the source of variation)

[b]Significance < .05 level. (F .05 = 4.20)

[1]Piers and Harris, op. cit.

between the Full and Restricted Models indicated an F value of 1.5882. This was not found to be significant at the .05 level of confidence and as a result the null hypothesis was accepted.

H_3 Among educable mentally handicapped boys those that receive group counseling will exhibit more anxiety reduction during the period of counseling as measured by discrepancy scores, pre and post test, on The Children's Manifest Anxiety Scale.

The Children's Manifest Anxiety Scale[1] indicated a discrepancy mean of -2.106 for group A and 2.333 for group B. The results of the analysis can be found in Table 4.

TABLE 4

ANALYSIS OF VARIANCE FOR THE CHILDREN'S MANIFEST ANXIETY SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1,12,20,29 34,39,44,46-47	.4897	1	4.8323[b]
Restricted Model	1-6,12-20, 29,34,39,44	.4327	28	

[a]The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance > .05 level ($F_{.05} = 4.26$)

The F-ratio of the variance between the Full and Restricted Models was 4.8323 which was significant at the .05 level of confidence. The null hypothesis was, therefore, rejected in this case and the hypothesis that among educable mentally handicapped boys those who receive group counseling will exhibit greater anxiety reduction as a result of counseling than those who do not receive this service was accepted.

[1]Castaneda, McCandless and Palermo, op. cit.

H_4 Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in academic subjects; arithmetic, reading (English) on comparisons made from pre to post counseling.

The discrepancy means for the ratings by teachers on the variable of reading were .617 for group A and .056 for group B.

The F- ratio yielded by the analysis of variance was 5.4149 indicating significance at the .05 level of confidence. The null hypothesis was rejected in this case.

The discrepancy means for the ratings by teachers on the variable of arithmetic were .500 for group A and .056 for group B.

Interaction between pre and post test in this case was found to be significant at the .05 level of confidence (F = 25.00) as indicated by the computer program. (See appendix for alternate preferred analysis of the arithmetic variable.) As a result, a critical ratio or t test designed to test the significance between correlated means was used. The obtained t of 3.00 was found to be significant at the .05 level of confidence and the null hypothesis was rejected in favor of the alternate.

According to the results of both the reading and arithmetic scales, the hypothesis that among educable mentally handicapped boys, those that receive group counseling will exhibit greater improvement as rated by teachers in academic subjects. (i.e. reading, arithmetic) than those who do not receive this service was accepted. Tables 5 and 6 contain the results of these analysis.

TABLE 5

ANALYSIS OF VARIANCE FOR RATINGS BY TEACHERS ON THE VARIABLE OF READING DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-6,26 46-47	.7993	1	5.4149[b]
Restricted Model	1-6 26	.7605	28	

[a]The Continuous and Categorical variable numbers used as predictors (deleted variables are the source of variation)

[b]Significance > .05 level. F .05 = 4.20)

TABLE 6

CRITICAL RATIO OR t TEST FOR RATINGS BY TEACHERS ON THE VARIABLE OF ARITHMETIC DISCREPANCY SCORES

Source of Variance	Value
t	3.00
Significance level*	t =› .05

*For 35 degrees of freedom, t at .05 equals 1.69

H_5 Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in deportment (conduct) on comparisons made from pre to post counseling.

The discrepancy scores for deportment as rated by teachers indicated a mean of .888 for group A and.167 for group B. The results of both groups were analyzed in accordance with the above stated hypothesis as shown in Table 7.

The variance of 8.3730 in this case was significant beyond the .05 level of confidence. The hypothesis that educable mentally handicapped boys who receive group counseling tend to show greater improve- in terms of general conduct than those who do not receive this service was supported.

TABLE 7

ANALYSIS OF VARIANCE FOR RATINGS BY TEACHERS ON THE VARIABLE OF DEPORTMENT DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-6,36 46-47	.5038	1	8.3730[b]
Restricted	1-6,36	.3555	28	

[a]The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance > .05 level. (F .05 = 4.20)

H_6 Among educable mentally handicapped boys, those that receive group counseling will exhibit better attendance records on comparisons made from pre to post counseling.

The means of the attendance discrepancy scores were .833 for group A and .111 for group B. The results of the analysis of variance between the two groups is presented in Table 8.

The obtained F-ratio of .0001 was not found to be significant at the .05 level of confidence and the null hypothesis was accepted in this case.

TABLE 8

ANALYSIS OF VARIANCE FOR ATTENDANCE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-6,41 46-47	.6171	1	.0001[b]
Restricted Model	1-6 41	.6171	28	

[a]The Continuous and Catagorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance < .05 level. (F .05 = 4.20)

H_7 Among educable mentally handicapped boys who receive group counseling sessions, there will be no difference between the upper 50% and the lower 50% of the group (based on I.Q.) on discrepancy scores, pre test post test, as measured by The Children's Self Concept Scale.

The mean of the discrepancy scores on The Children's Self Concept Scale[1] for the upper I.Q. group was 6.500 and 5.833 for the lower I.Q. group.

[1]Lipsitt, op cit.

The F-ratio of the variance between the Full and Restricted Models was .006 which was not significant at the .05 level of confidence. The null hypothesis was accepted, indicating that I.Q. was not a significant factor in terms of self concept modification among educable mentally handicapped boys who receive group sounseling.

The results of the analysis can be found in Table 9.

TABLE 9

ANALYSIS OF VARIANCE BETWEEN UPPER AND LOWER I.Q. GROUPS ON THE CHILDREN'S SELF CONCEPT SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-5,17 24,25	.1568	1	.0006[b]
Restricted Model	1-5 17	.1568	12	

[a]The Continuous and Catagorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance < .05 level. (F .05 = 4.75)

H_8 Among educable mentally handicapped boys who receive group counseling sessions, there will be no difference between the upper 50% and the lower 50% of the group based on I.Q.) on discrepancy scores, pre test post test, as measured by The Children's Manifest Anxiety Scale.

The mean of the discrepancy scores on The Children's Manifest Anxiety Scale[1] was -1.333 for the upper I.Q. group and -1.111 for the lower I.Q. group.

The F-ratio of the variance between the Full and Restricted Models was .2697 which was not significant at the .05 level of confidence.

The null hypothesis was accepted indicating that in this case I.Q. was not a significant factor in terms of anxiety modification among educable mentally handicapped boys who received group counseling.

The results are contained in Table 10.

TABLE 10

ANALYSIS OF VARIANCE BETWEEN UPPER AND LOWER I.Q. GROUPS ON THE CHILDREN'S MANIFEST ANXIETY SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-4,12 24-25	.3539	1	.2697[b]
Restricted Model	1-4 12	.3405	12	

[a]The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance < .05 level. (F .05 = 4.75)

[1]Castaneda, McCandless and Palermo, op. cit.

H_9 Among educable mentally handicapped boys who receive group counseling sessions, there will be no difference between the upper 50% and the lower 50% of the group (based on I.Q.) on discrepancy scores, pre test post test, as measured by The Way I Feel About Myself Scale.

The mean of the discrepancy scores on The Way I Feel About Myself Scale[1] for the upper I.Q. group was 4.667 and .778 for the lower I.Q. group.

The F-ratio of the variance botween the Full and Restricted Models was 1.8753 which was not significant at the .05 level of confidence.

The null hypothesis was accepted in this case supporting the results indicated by the other self concept scale.

The results of the analysis of variance between the two groups is presented in Table 11.

H_{10} Among educable mentally handicapped boys who receive group counseling there will be no difference between the upper 50% and the lower 50% of the group (based on age) on the discrepancy scores, pre test post test as measured by The Children's Self Concept Scale.

The mean of the discrepancy scores on The Children's Self Concept Scale[2] for the upper age group was 3.889 and 8.889 for the lower age group. The age range for the lower age group was from 115 to 139 months and 144 to 167 months for the upper age group.

---

[1]Piers and Harris, op. cit.

[2]Lipsitt, op. cit.

TABLE 11

ANALYSIS OF VARIANCE BETWEEN UPPER AND LOWER I.Q. GROUPS ON THE WAY I FEEL ABOUT MYSELF SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-5 7.24	.3670	1	1.875[b]
Restricted Model	1-5 7	.2680	12	

[a]The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance $<$ .05 level. ($F_{.05} = 4.75$)

The F-ratio of the variance between the Full and Restricted Models was 2.319 which was not significant at the .05 level of confidence.

The null hypothesis was accepted indicating that age was also not a significant factor in terms of self concept modification among educable mentally handicapped boys who received group counseling.

The results of the analysis can be found in Table 12.

H_{11} Among educable mentally handicapped boys who receive group counseling there will be no difference between the upper 50% and the lower 50% of the group (based on age) on discrepancy scores, pre test post test as measured by The Way I Feel About Myself Scale.

TABLE 12

ANALYSIS OF VARIANCE BETWEEN UPPER AND LOWER AGE GROUPS ON THE CHILDREN'S SELF CONCEPT SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-3,5-6 17,22-23	.2467	1	2.3199[b]
Restricted Model	1-3,5-6 17	.1010	12	

[a] The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b] Significance $\leq$ .05 level. ($F_{.05} = 4.75$)

The mean of the discrepancy score on The Way I Feel About Myself Scale[1] for the upper age group was 4.000 and 1.444 for the lower age group.

The F-ratio of the variance between the Full and Restricted Models was .5876 which was not significant at the .05 level of confidence.

The null hypothesis was accepted in this case.

The results of the analysis of variance between the two groups is presented in Table 13.

[1] Piers and Harris, op. cit.

TABLE 13

ANALYSIS OF VARIANCE BETWEEN UPPER AND LOWER AGE GROUPS ON THE WAY I FEEL ABOUT MYSELF SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-3,5-6 7,22-23	.2979	1	.5876[b]
Restricted Model	1-3,5-6 7	.2635	12	

[a]The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance $\leq$ .05 level. ($F_{.05} = 4.75$)

H_{12} Among educable mentally handicapped boys who receive group counseling there will be no difference between the upper 50% and the lower 50% of the group (based on age) on discrepancy scores, pre test post test as measured by The Children's Manifest Anxiety Scale.

The mean of the discrepancy scores on The Children's Manifest Anxiety Scale[1] was 1.556 for the upper age group and 1.500 for the lower age group.

The F-ratio of the variance between the Full and Restricted Models was .0079 which was not significant at the .05 level of confidence.

The null hypothesis was accepted indicating, that in this case, age was not a significant factor in terms of anxiety modification among educable mentally handicapped boys who received group counseling.

The results are contained in Table 14.

[1]Castaneda, McCandless and Palermo, op. cit.

TABLE 14

ANALYSIS OF VARIANCE BETWEEN UPPER AND LOWER AGE GROUPS ON THE CHILDREN'S MANIFEST ANXIETY SCALE DISCREPANCY SCORES

Source of Variance	n[a]	RSQ	df	F
Full Model	1-3,12 22-23	.3359	1	.0079[b]
Restricted Model	1-3 12	.3355	12	

[a]The Continuous and Categorical variable numbers used as predictors. (deleted variables are the source of variation)

[b]Significance < .05 level. (F .05 = 4.75)

CHAPTER V

SUMMARY AND DISCUSSION

Summary

The primary purpose of this study was to attempt to effect a change in the concepts that educable mentally handicapped boys have of themselves in school. A review of the literature indicated a need for research concerning counseling as it relates to self concept modification in the mentally handicapped.

The review also indicated that very little research had been conducted in the area of self concept in general where the mentally handicapped were concerned.

In addition to self concept, this study was also concerned with the effects of counseling on the variables of anxiety; academics, i.e., reading and arithmetic; deportment; attendance; age; and I.Q.

The general design consisted of two matched groups (group A and group B) of educable mentally handicapped boys identified as behavior problems on a behavior rating scale. The total sample consisted of 36 subjects with 18 in the experimental group and 18 in the control group. All students were classified by teachers and/or home visits as to socioeconomic status. The chronological age range was 9 through 13.

Group A was administratively assigned to three subgroups of 6 students in each and received 12 one hour counseling sessions with the principal investigator. Makeup sessions were held for those

subjects who were absent for the regularly scheduled meetings.

Group B was also administratively subdivided into three subgroups of 6 each and spent equal time with the same counselor (the principal investigator) in a noncounseling, but structured, library-study situation.

Both groups received pre tests and post tests with two self concept scales and one anxiety scale. Both group A and B were rated by teachers, pre and post counseling, on the variables of reading, arithmetic, and deportment. Both groups were also compared (pre and post counseling) on the variable of attendance.

The counseled group was also divided for statistical purposes into upper I.Q. (69-80), lower I.Q. (56-68), and upper age (141-167 months), lower age (115-130 months) in order to determine whether or not age and I.Q. were significant factors in relation to counseling in this study.

Two instruments were used to measure self concept. They were The Children's Self Concept Scale,[1] and The Way I Feel About Myself Scale.[2] Both of these scales were developed as a general measure of self concept for children.

Anxiety was measured by The Children's Manifest Anxiety Scale.[3] This instrument was also developed for use with children.

---

[1] Lipsitt, op. cit.

[2] Piers and Harris, op. cit.

[3] Castaneda, McCandless, and Palermo, op. cit.

Pupils were identified as behavior problems by a pre-set cutoff score on the Pupil Behavior Rating Scale.[1]

The groups were matched on the basis of socioeconomic status by the Index of Status Characteristics developed by Warner, Meeker, and Eells.[2]

The groups were further matched on the basis of chronological age and I.Q. as determined by scores on The Wechsler Intelligence Scale for Children. The I.Q. range was from 56-80.

Twelve hypotheses were proposed for this study. The results of these are discussed below.

H_1: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in terms of a more positive concept of themselves in school as measured by discrepancy scores, pre and post test, on The Children's Self Concept Scale.

The first hypothesis was based on the theory that self concept can be modified by group counseling procedures where the individual, through interaction with the group in a therapeutic situation, can gain insight into possible problems. It was postulated that a change in self concept in general would be reflected in a change in attitudes toward school.

Perusal of the data indicated that the changes which took place were generally substantial ones. Ten of the eighteen subjects in the experimental group indicated a gain of 15 or more points on the scale after counseling.

---

[1] Bowers, op. cit.

[2] Warner, Meeker, and Eells, op. cit.

Statistical treatment by analysis of variance supported the above mentioned hypothesis.

> H_2: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in terms of a more positive concept of themselves in school as measured by discrepancy scores, pre and post test, on The Way I Feel About Mysolf Scale.

This hypothesis was not supported by statistical treatment. Examination of the means of the discrepancy scores, however, indicated that there was a mean discrepancy score of 6.555 for the experimental group as compared to a .333 mean discrepancy for the control group.

Six of the eighteen subjects showed a gain of 10 or more scale points, indicating that many of the youngsters did exhibit improvement.

A possible explanation for lack of significance on this scale may be attributed to the fact that 80 statements were read to the subjects. Although much time was taken for explanation of words not understood, it is possible that there were some subjects who did not understand the questions.

> H_3: Among educable mentally handicapped boys, those that receive group counseling will exhibit more anxiety reduction during the period of counseling as measured by discrepancy scores, pre and post test, on The Children's Manifest Anxiety Scale.

The statistical treatment of the present study supported the hypothesis that group counseling would result in significantly more anxiety reduction for the experimental group than for the control group. Theoretically, it would be expected that a change of self concept in a positive direction should result in a better adjusted individual with less anxiety.

H_4: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in academic subjects, arithmetic and reading, on comparisons made from pre to post counseling.

This hypothesis was also supported by the present investigation and it was concluded that, among educable mentally handicapped boys, those that receive the benefit of group counseling will exhibit greater improvement in reading and arithmetic as rated by teachers.

Research in the past has indicated that there is a direct relationship between adjustment and performance. It is, therefore, conceivable that an improvement in self concept was also accompanied by an improvement in academic performance in this case.

H_5: Among educable mentally handicapped boys, those that receive group counseling will show greater improvement in deportment (conduct) on comparisons made from pre to post counseling.

The fifth hypothesis is based on the theory that there is an inextricable relationship between self concept and overt behavior. A change in one, according to phenomenological theorists, results in a change in the other.

The hypothesis that, among educable mentally handicapped boys, those that receive group counseling will show greater improvement in deportment was substantiated and the null hypothesis was rejected.

H_6: Among educable mentally handicapped boys, those that receive group counseling will exhibit better attendance records on comparisons made from pre to post counseling.

Statistical treatment by analysis of variance did not support this hypothesis.

In reviewing the results, one must consider the fact that the study took place during the last three months of the school year. The investigator also feels that atleast three sessions elapsed before rapport was essentially established with the subjects in the experimental group. It is hypothesized that better results, in terms of improved attendance, would have been obtained if the research had been initiated earlier in the year.

Hypotheses 7 through 12 were concerned with the variables of age and I.Q. within the counseled group. The null hypothesis was accepted in all cases indicating that, according to the results of this study, age and I.Q. were not significant factors in terms of counseling as measured by self concept and anxiety scales with mentally handicapped boys.

It should be noted, however, that a small sample was used in this case and it is difficult to make generalizations on the basis of 18 subjects.

Both the age and I.Q. ranges were also small and it is felt that a larger sample with a wider range of ages and I.Q.s may well result in significance.

Group Counseling

One of the major concommitants of this study was the evaluation of the various techniques applied in the group counseling sessions.

This investigator attempted to facilitate an improvement in self concept by establishing rapport with each individual in the experimental group and indicating to each subject that the counselor felt he was a worthwhile and important person.

The sessions were structured but permissive. The counselor began each discussion by asking a question or making a statement and permitting the group to develop the theme from there. The counselor occasionally stimulated discussion with appropriate comments or questions.

Each session developed a major theme, such as "dealing with authority figures" or "who am I?".

The investigator was indeed surprised at some of the insight expressed by the subjects, especially with reference to their feelings of being "different" or being in a "special" class.

Opportunities for expression of aggression and hostility, and for release of anxiety were provided through role playing, games, and sharing of experiences.

The older subjects appeared to benefit more from role playing, whereas the younger children preferred to play.

Discussion sometimes centered around such basic problems as getting enough to eat. Previous investigation of cumulative records had revealed that many of these children came from poor environments where they might not be getting the proper diet.

Another technique that appeared to hold the interest of the group and stimulate discussion was the use of films.

Play therapy, in the form of games, appeared to be one of the most successful techniques for all groups. It not only permitted expression of aggression and hostility, but it also served as a learning situation where the children began to function as a group.

Teachers reported, at the end of the study, that the students had looked forward to the sessions. The investigator had little difficulty in assembling the groups after the first two sessions; in effect, they began to summon each other to go to the meetings.

During the first and second session, some of the students wandered about the room paying little attention to the discussions. About the third or fourth session they began to participate in the discussions.

Counseling only boys appeared to be an important factor. Some of the discussions concerned the opposite sex and the investigator felt that it would have been somewhat inhibited were girls present.

A great deal of hostility was directed toward teachers and school. Having experienced repeated failure in the school setting, many of these students harbored a feeling of futility where academics were concerned. It appeared that, by talking about the role of the school in each student's life, insight was gained by many of the students into some of the problems associated with school. Also, sharing of similar problems in the discussions seemed to lead to a more realistic appraisal of one's strengths and weaknesses.

The counselor was continually supportive and tried not to be judgmental, allowing for free expression. Putting a hand on a subject's shoulder, for example, and expressing encouragement appeared to go a long way in establishing a feeling of acceptance. The sessions ended with a recapitulation of the main theme by the counselor, who attempted to close each meeting on a positive note.

Discussion

The findings of this study indicated that self concept can be modified through group counseling within the school setting. A great deal depends on the establishment of rapport between the counselor and the group, as it does in any therapeutic situation.

The fact that anxiety was reduced and general school behavior improved supports the contention of this investigator that this type of ancillary service should become a part of every school program for all children both handicapped and normal.

The cliche that "a child with a handicap is still a child" is a somewhat trite expression but it is nevertheless an essential truth. Special educators need to become more aware of the areas of affect and more familiar with effective techniques, not only for motivating students, but for helping them to adjust within the academic milieu. Counseling can become a major tool in these endeavors.

This study is believed,by this investigator, to be of a pilot nature. It does, however, point out a need for further research in the area of self concept in relation to mentally handicapped children. The research should be replicated using more than one counselor, a larger sample, and including such variables as counseling techniques, measured achievement, I.Q. change, and counselor training.

An important factor not evaluated in this study, but needing investigation, is the teacher variable as it relates to self concept and counseling.

The need for further research on counseling and special class versus regular class placement as it effects self concept is also indicated.

APPENDIX A

INTRODUCTORY EXPLANATION

I suppose you are wondering why you are here and what we are going to do today.

The answer is quite simple but very important.

In order to do a better job of teaching students, teachers need to know something about how students really feel toward school toward other people and especially how they feel about themselves. This information will help them to develop the best possible program for all the students in the school.

I have here three short tests that I would like you to take today. Let me tell you something about them before I pass them out. None of the information you give us in this meeting will have any effect on your grade. There are no right or wrong answers as each person will probably answer each question differently. Your classmates or teachers cannot help you answer any of these questions because only you know how you really feel. Therefore, it is important that everyone answer truthfully.

Will you all do this?

Allright, now I will pass out the booklet (PASS TESTS).

We will answer the questions together so wait until all of us are ready.

Be sure to ask if there is a word you do not understand or if you do not know what you are supposed to do.

We will all read the questions together, so please do not try to go ahead.

Open up the test booklet and read the directions on the top of the first page with me.

APPENDIX B

MEASURES OF SELF CONCEPT AND ANXIETY

Following the instructions given in Appendix A each subject was administered The Way I Feel About Myself Scale, The Children's Manifest Anxiety Scale and The Children's Self Concept Scale, in that order. The following is a copy of the instructions and the scales. Also included is the scoring method for each scale.

THE WAY I FEEL ABOUT MYSELF

Here are a set of statements. Some of them are true of you and so you will circle the YES. Some are not true of you and so you will circle the NO. Answer every question even if some are hard to decide. There are no right or wrong answers. Only you can tell us how you feel about myself, so we hope you will mark the way you really feel inside.

1. My classmates make fun of me YES NO
2. I am a happy person YES NO
3. It is hard for me to make friends YES NO
4. I am often sad YES NO
5. I am smart YES NO
6. I am shy YES NO
7. I get nervous when the teacher calls on me YES NO
8. My looks bother me YES NO
9. When I grow up I will be an important person YES NO
10. I get worried when we have tests in school YES NO
11. I am unpopular YES NO
12. I am well behaved in school YES NO
13. It is usually my fault when something goes wrong YES NO
14. I cause trouble to my family YES NO
15. I am strong YES NO
16. I have good ideas YES NO
17. I am an important member of my family YES NO
18. I like being the way I am YES NO
19. I am good at making things with my hands YES NO
20. I give up easily YES NO
21. I am good in my schoolwork YES NO
22. I do many bad things YES NO
23. I can draw well YES NO
24. I am good in music YES NO
25. I behave badly at home YES NO
26. I am slow in finishing my schoolwork YES NO

27. I am an important member of my class YES NO

28. I am nervous YES NO

29. I have pretty eyes YES NO

30. I can give a good report in front of the class YES NO

31. In school I am a dreamer YES NO

32. I pick on my brother(s) and sister(s) YES NO

33. My friends like my ideas YES NO

34. I often get into trouble YES NO

35. I am disobedient at home YES NO

36. I am unlucky YES NO

37. I worry a lot YES NO

38. My parents expect too much of me YES NO

39. I usually want my own way YES NO

40. I feel left out of things YES NO

41. I have nice hair YES NO

42. I often volunteer in school YES NO

43. I have a pleasant face YES NO

44. I sleep well at night YES NO

45. I hate school YES NO

46. I am among the last to be chosen for games YES NO

47. I am sick a lot YES NO

48. I am often mean to other people YES NO

49. My classmates in school think I have good ideas YES NO

50. I am unhappy YES NO

51. I have many friends YES NO

52. I am cheerful YES NO

53. I am dumb about most things YES NO

54. I am goodlooking YES NO

55. I have lots of pep YES NO

56. I get into a lot of fights YES NO

57. I am popular with boys YES NO

58. People pick on me YES NO

59. My family is disappointed in me YES NO

60. I wish I were different YES NO

61. When I try to make something, everything seems to go wrong YES NO

62. I am picked on at home YES NO

63. I am a leader in games and sports YES NO

64. I am clumsy YES NO

65. In games and sports I watch instead of play YES NO

66. I forget what I learn YES NO

67. I am easy to get along with YES NO

68. I lose my temper easily YES NO

69. I am popular with girls YES NO

70. I am a good reader YES NO

71. I would rather work alone than with a group YES NO

72. I dislike my brother (sister) YES NO

73. I have a bad figure YES NO

74. I am often afraid YES NO

75. I am always dropping or breaking things YES NO

76. I cry easily YES NO

77. I am different from other people YES NO

78. I think bad thoughts YES NO

79. I can be trusted YES NO

80. I am a good person YES NO

INSTRUCTIONS FOR THE CHILDREN'S MANIFEST

ANXIETY SCALE

The next test is a little shorter and much like the first one. Please ask questions if there is any thing you do not understand. Turn to the next page and we will look at the directions together.

THE CHILDREN'S FORM OF THE MANIFEST ANXIETY SCALE

Read each question carefully. Put a circle around the word YES if you think it is true about you. Put a circle around the word NO if you think it is not true about you.

1. It is hard for me to keep my mind on anything YES NO
2. I get nervous when someone watches me work YES NO
3. I feel I have to be best in everything YES NO
4. I blush easily YES NO
5. I like everyone I know YES NO
6. I notice my heart beats very fast sometimes YES NO
7. At times I feel like shouting YES NO
8. I wish I could be very far from here YES NO
9. Others seem to do things easier than I can YES NO
10. I would rather win than lose a game YES NO
11. I am secretly afraid of a lot of things YES NO
12. I feel that others do not like the way I do things YES NO
13. I feel alone even when there are people around me YES N(
14. I have trouble making up my mind YES N(
15. I get nervous when things do not go the right way for me YES N(
16. I worry most of the time YES N(
17. I am always kind YES N(
18. I worry about what my parents will say to me YES N(
19. Often I have trouble getting my breath YES N(
20. I get angry easily YES N(
21. I always have good manners YES N(
22. My hands feel sweaty YES N
23. I have to go to the toilet more than most people YES N
24. Other children are happier than I YES N

25. I worry about what other people think about me YES NO

26. I have trouble swallowing YES NO

27. I have worried about things that did not really make any difference later YES NO

28. My feelings get hurt easily YES NO

29. I worry about doing the right things YES NO

30. I am always good YES NO

31. I worry about what is going to happen YES NO

32. It is hard for me to go to sleep at night YES NO

33. I worry about how well I am doing in school YES NO

34. I am always nice to everyone YES NO

35. My feelings get hurt easily when I am scolded YES NO

36. I tell the truth every single time YES NO

37. I often get lonesome when I am with people YES NO

38. I feel someone will tell me I do things the wrong way YES NO

39. I am afraid of the dark YES NO

40. It is hard for me to keep my mind on my school work YES NO

41. I never get angry YES NO

42. Often I feel sick in my stomach YES NO

43. I worry when I go to bed at night YES NO

44. I often do things I wish I had never done YES NO

45. I get headaches YES NO

46. I often worry about what could happen to my parents YES NO

47. I never say things I shouldn't YES NO

48. I get tired easily YES NO

49. It is good to get high grades in school YES NO

50. I have bad dreams YES NO

51. I am nervous YES NO

52. I never lie YES NO

53. I often worry about something bad happening to me YES NO

INSTRUCTIONS FOR THE CHILDREN'S SELF CONCEPT SCALE

The last test is a little different. Turn to the next page and I will tell you what to do.

Look at the top of the page and you will see five different headings. Watch me as I write them on the board. (WRITE HEADINGS ON CHALK BOARD) Let us read these headings together. (READ HEADINGS)

Now, suppose I ask you (POINT TO THE FIRST CHILD) how much do you like baseball? Would you put the check (POINTING) under "not at all," "not very often," "some of the time," or "all of the time"? (PAUSE AND LET THE SUBJECT POINT TO HIS CHOICE). Do the same thing with all the students individually. After each reply, say X feels that he likes baseball X of the time. He did not check (READ AND POINT TO THE HEADINGS HE DID NOT CHECK). Does everyone understand how to answer these questions?

We will now read them together and you put a check in the box which tells how you feel about yourself.

(THE FIRST FEW QUESTIONS SHOULD BE CAREFULLY PROCTORED TO MAKE SURE THE STUDENTS UNDERSTAND WHAT THEY ARE SUPPOSED TO DO)

THE CHILDREN'S SELF CONCEPT SCALE

I AM	not at all	not very often	some of the time	most of the time	all of the time
1. Friendly					
2. Happy					
3. Kind					
4. Brave					
5. Honest					
6. Likable					
7. Trusted					
8. Good					
9. Proud					
10. Lazy					
11. Loyal					
12. Co-operative					
13. Cheerful					
14. Thoughtful					
15. Popular					
16. Courteous					
17. Jealous					
18. Obedient					
19. Polite					
20. Bashful					
21. Clean					
22. Helpful					

METHODS OF SCORING

The Way I Feel About Myself Scale was scored according to the following instructions:

Items are scored in the direction of high (adequate) self concept. It is suggested that the total number of "highs" be added and written on the front of the scale, and then the number of "lows" be added and written below it. These should sum to 80.

KEY

1. No	21. Yes	41. Yes	61. No
2. Yes	22. No	42. Yes	62. No
3. No	23. Yes	43. Yes	63. Yes
4. No	24. Yes	44. Yes	64. No
5. Yes	25. No	45. No	65. No
6. No	26. No	46. No	66. No
7. No	27. Yes	47. No	67. Yes
8. No	28. No	48. No	68. No
9. Yes	29. Yes	49. Yes	69. Yes
10. No	30. Yes	50. No	70. Yes
11. No	31. No	51. Yes	71. No
12. Yes	32. No	52. Yes	72. No
13. No	33. Yes	53. No	73. No
14. No	34. No	54. Yes	74. No
15. Yes	35. No	55. Yes	75. No
16. Yes	36. No	56. No	76. No
17. Yes	37. No	57. Yes	77. No
18. Yes	38. No	58. No	78. No
19. Yes	39. No	59. No	79. Yes
20. No.	40. No	60. No	80. Yes

The Children's Manifest Anxiety Scale provides an index of the level of anxiety by summing the number of these items answered yes.

1	8	15	23	29	38	45
2	9	16	24	31	39	46
3	11	18	25	32	40	48
4	12	19	26	33	42	50
6	13	20	27	35	43	51
7	14	22	28	37	44	53

The Children's Self Concept Scale is made up of 22 trait-descriptive adjectives. Nineteen of these are positive and 3 are negative. Scoring was on a basis of 1 point for the first column, 2 points for the second column and so forth to 5 points for the last column, except in the case of the 3 negative adjectives which were scored in inverse fashion.

List of Means and Standard Deviations for all Variables

	Variable	*Mean	SD
1.	Unit Vector	1.00 @ +00	0.00
2.	Negroid	6.60 @ -01	.47
3.	Caucasian	3.33 @ -01	.47
4.	Chronological Age	1.43 @ +02	16.61
5.	Socioeconomic Status	6.22 @ +01	7.80
6.	I.Q.	6.73 @ +01	7.33
7.	Self Concept Scale I, Pretest	5.53 @ +01	9.38
8.	Self Concept Scale I, Pretest (deviation from mean for A, zero for B)	-9.70 @ -12	6.95
9.	Self Concept Scale I, Pretest (deviation from mean for B, zero for A)	-1.29 @ -11	6.25
10.	Vector Sum of 8 and 9	-2.26 @ -11	9.35
11.	Self Concept Scale I. Post Test	5.81 @ +01	10.67
12.	The Children's Manifest Anxiety Scale, Pretest	1.61 @ +01	5.91
13.	The Children's Manifest Anxiety Scale, Pretest (deviation from mean for A, zero for B)	-2.26 @ -11	3.96
14.	The Children's Manifest Anxiety Scale, Pretest (deviation from mean for B, zero for A)	-2.58 @ -11	4.37
15.	Vector Sum of 13 and 14	-4.85 @ -11	5.90
16.	The Children's Manifest Anxiety Scale, Post Test	1.58 @ +01	8.87
17.	Self Concept Scale II, Pretest	8.3' @ +01	8.30
18.	Self Concept Scale II, Pretest, (deviation from mean for A, zero for B)	-4.85 @ -11	5.59
19.	Self Concept Scale II, Pretest, (deviation from mean for B, zero for A)	9.70 @ -11	5.52
20.	Vector Sum of 18 and 19	4.85 @ -11	7.86
21.	Self Concept Scale II, Post Test	8.88 @ +01	10.71
22.	Age Catagory for Group A, Group B all Zero	2.50 @ -01	.43
23.	Age Catagory for Group B, Group A all Zero	2.50 @ -01	.43
24.	I. Q. Catagory for Group A, Group B all Zero	2.50 @ -01	.43
25.	I.Q. Catagory for Group B, Group A all Zero	2.50 @ -01	.43
26.	Reading, Pretest	1.94 @ +00	.99
27.	Reading, Pretest (doviation from mean for A, zero for B)	-2.42 @ -12	.78
28.	Reading, Pretest (deviation from mean for B, zero for A)	1.61 @ -12	.55
29.	Vector sum of 27 and 28	-8.08 @ -13	.95
30.	Reading, Post Test	2.27 @ +00	.86
31.	Arithmetic, Pretest	2.16 @ +00	.79
32.	Arithmetic, Pretest (deviation from mean for A, zero for B)	-8.04 @ -13	.57
33.	Arithmetic, Pretest (deviation from mean for B, zero for A)	3.08 @ -12	.48

* When minus, move decimal place to the left that number of places.

	Variable	*Mean	SD
34.	Vector Sum of 32 and 33	2.27 @ -12	.74
35.	Arithmetic, Post Test	2.38 @ +00	.79
36.	Deportment, Pretest	1.58 @ +00	.79
37.	Deportment, Pretest (deviation from mean for A, zero for B)	-6.56 @ -13	.58
38.	Deportment, Pretest (deviation from mean for B, zero for A)	-1.81 @ -12	.50
39.	Vector Sum of 37 and 38	-2.62 @ -12	.77
40.	Deportment, Post Test	2.00 @ +00	.91
41.	Attendance, Pretest	5.25 @ +00	5.51
42.	Attendance, Pretest, (deviation from mean for A, zero for B)	1.94 @ -11	3.79
43.	Attendance, Pretest, (deviation from mean for B, zero for A)	-1.89 @ -11	3.99
44.	Vector Sum of 42 and 43	4.04 @ -11	5.51
45.	Attendance Post Test	6.02 @ +00	5.47
46.	One if A, zero if B	5.00 @ -01	.50
47.	One if B, zero if A	5.00 @ -01	.50
48.	Self Concept Scale I $X^{7} \cdot X^{46}$	2.73 @ +01	28.17
49.	Self Concept Scale I $X^{7} \cdot X^{47}$	2.80 @ +01	28.74
50.	The Children's Manifest Anxiety Scale $X^{12} \cdot X^{46}$	8.22 @ +00	9.12
51.	The Children's Manifest Anxiety Scale $X^{12} \cdot X^{47}$	7.97 @ +00	9.09
52.	Self Concept Scale II $X^{17} \cdot X^{46}$	4.01 @ +01	40.58
53.	Self Concept Scale II $X^{17} \cdot X^{47}$	4.28 @ +01	43.21
54.	Reading $X^{26} \cdot X^{46}$	8.33 @ -01	1.14
55.	Reading $X^{26} \cdot X^{47}$	1.11 @ +00	1.24
56.	Arithmetic $X^{31} \cdot X^{46}$	9.44 @ -01	1.10
57.	Arithmetic $X^{31} \cdot X^{47}$	1.22 @ +00	1.31
58.	Deportment $X^{36} \cdot X^{46}$	6.94 @ -01	.90
59.	Deportment $X^{36} \cdot X^{47}$	8.88 @ -01	1.02
60.	Attendance $X^{41} \cdot X^{46}$	2.47 @ +00	4.53
61.	Attendance $X^{41} \cdot X^{47}$	2.77 @ +00	4.86

* When minus, move decimal place to the left that number of places

TREATMENT EFFECTS OBTAINED IN PRESENCE OF CONCOMITANT VARIABLES

(Bottenberg and Ward)

Investigators frequently compare the effects of different conditions, or treatments-levels of temperature, sizes of groups, modes of training, and the like-in order to establish a basis for recommending which, if any, is preferable for future use. The usual procedure is to make observations of the criterion of interest under each condition in an experimental situation, and to represent the conditions, or treatments, by categorical predictor vectors in the analysis of the resulting data. The primary purpose of the analysis is to compare the effects of the various treatments on the criterion vector. Sometimes, however, an investigator suspects that the operation of a continuous variable in the experimental situation may lead to incorrect evaluations of the treatment effects. In this event, he must take account of the continuous variable in the analysis. We refer to such variables as "concomitant" variables.

A concomitant variable usually can be associated either with the experimental unit (e.g., age of a person or weight of a rat) or with some aspect of the experimental environment (e.g. atmospheric temperature and humidity when observations are made). For convenience, we sometimes distinguish two types of concomitant variables-those that are not influenced by treatments and those that are influenced by treatments. Although such variables may effect interpretations of experimental findings, we can avoid erroneous conclusions by formulating adequate regression models and developing answers to an appropriate sequence of research questions.

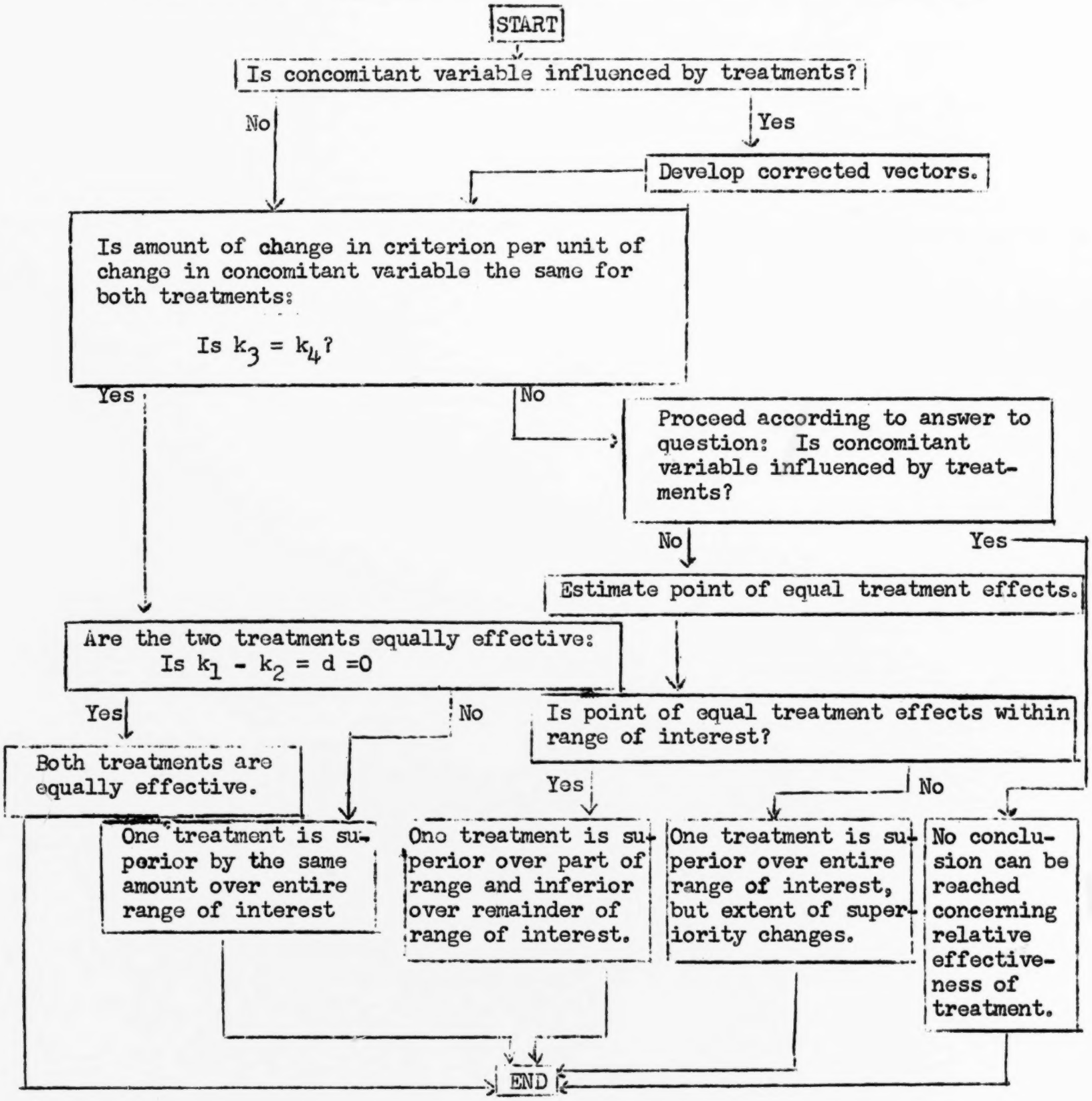
A flowchart showing the sequence of steps necessary for comparing the effects of two treatments when a concomitant variable may be operative is included for convenient reference.

ANALYSIS OF TREATMENT EFFECTS WHEN
CONCOMITANT VARIABLES ARE INFLUENCED BY TREATMENTS
(See Flowchart)

Variable	Full Model	Restricted Model	RSQ	df	F
Self Concept Scale I	1-6 8-9 46,47	1-6 10 46,47	.454	1/28	.4726
Self Concept Scale II	1-6 18-19 46,47	1-6 20 46,47	.268	1/28	.2439
The Children's Manifest Anxiety Scale	1-6 13-14 46,47	1-6 15 46,47	.365	1/28	.0591
Deportment	1-6 37-38 46,47	1-6 39 46,47	.503	1/28	.4786
Reading	1-6 27-28 46,47	1-6 29 46,47	.799	1/28	.6850
Arithmetic	1-6 32-33 46,47	1-6 34 46,47	.202	1/28	25.0794
Attendance	1-6 42-43 46,47	1-6 44 46,47	.627	1/28	1.99

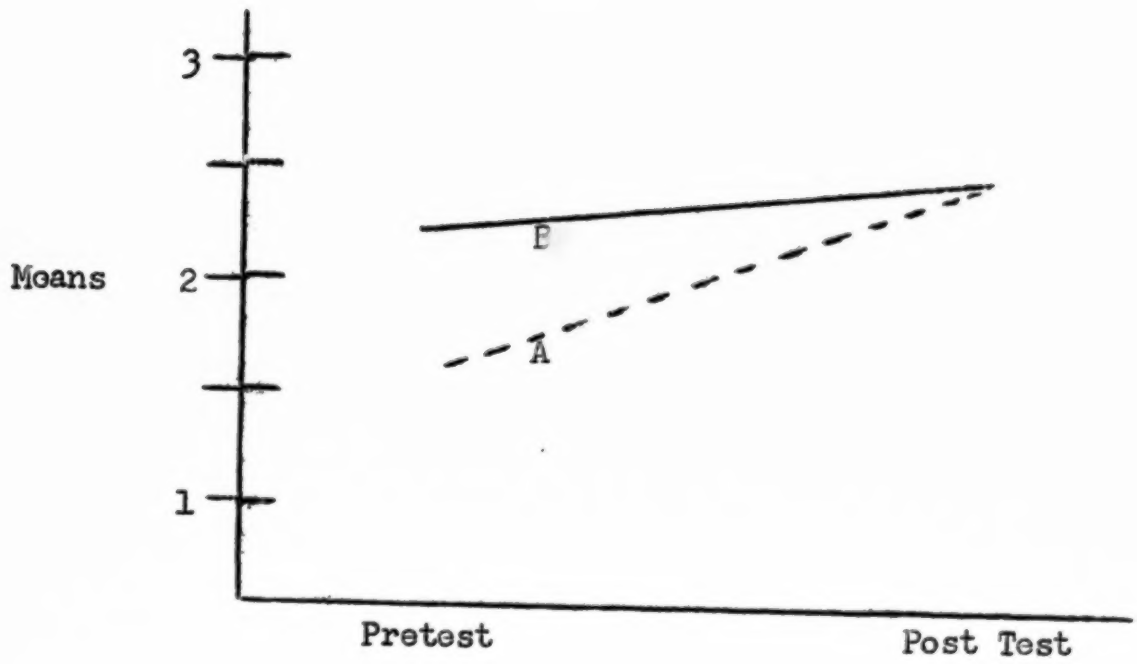
(F for 1/28 df at .05 = 4.20)

Flowchart showing sequence of steps necessary for comparing effects of two treatments when a concomitant variable may be operative.


START
Is concomitant variable influenced by treatments?
No
Yes
Develop corrected vectors.
Is amount of change in criterion per unit of change in concomitant variable the same for both treatments:
Is $k_3 = k_4$?
Yes
No
Proceed according to answer to question: Is concomitant variable influenced by treatments?
No
Yes
Estimate point of equal treatment effects.
Are the two treatments equally effective:
Is $k_1 - k_2 = d = 0$
Yes
No
Is point of equal treatment effects within range of interest?
Yes
No
Both treatments are equally effective.
One treatment is superior by the same amount over entire range of interest
One treatment is superior over part of range and inferior over remainder of range of interest.
One treatment is superior over entire range of interest, but extent of superiority changes.
No conclusion can be reached concerning relative effectiveness of treatment.
END

PREFERRED ALTERNATE ANALYSIS OF ARITHMETIC VARIABLE
(as suggested by Bottenberg and Ward)

Means (Arithmetic)	A	B
Pretest	1.67	2.28
Post Test	2.44	2.50



Interaction Effects of Experimental (Counseled) and Control (Non-Counseled) Groups on the Variable of Arithmetic

It should be noted that the experimental group started lower and made greater gains. This indicates that one treatment (counseling) made superior gains over the entire range of interests.

ANALYSIS OF TREATMENT EFFECTS WHEN
CONCOMITANT VARIABLES ARE NOT INFLUENCED BY TREATMENTS

(See sequence of tests of hypotheses)

Variable	Full Model	Restricted Model	RSQ	df	F
Self Concept Scale I	1-6 46-49	1-7 46-47	.427	1/28	.6122
The Children's Manifest Anxiety Scale	1-6 46-47 50-51	1-6 12 46-47	.365	1/28	.0591
Self Concept Scale II	1-6 46-47 52-53	1-6 17 46-47	.268	1/28	.2437
Reading	1-6 46-47 54-55	1-6 26 46-47	.799	1/28	.6849
Deportment	1-6 46-47 58-59	1-6 36 46-47	.503	1/28	.4786
Attendance	1-6 46-47 60-61	1-6 41 46-47	.617	1/28	1.5249
Arithmetic	1-6 46-47 56-57	1-6 21 46-47	.541	1/28	2.4925

(F for 1/28 df at .05 = 4.20)

SEQUENCE OF TESTS OF HYPOTHESES

Question	Mathematical Expression	Answer	Figure
1. Is amount of change in criterion per unit of concomitant variable the same for both treatments over observed range of concomitant variable?	$k_3 = k_4$		
		Yes	1
		No	2 or 3
Given $k_3 = k_4$			
2. Are the two treatments equally effective over observed range of the concomitant variable?	$k_1 = k_2$, i.e., $d = k_1 - k_2 = 0$		
		Yes	1 (superimposed lines)
		No	1
Given $k_3 \neq k_4$			
3. At what point (a_0) on concomitant variable may both treatments be expected to be equally effective? Is a_0 within range of interest?	If a_0 is estimate of m_0 (in Fig. 3), $a_0 = \frac{k_2 - k_1}{k_3 - k_4}$		
		Yes	3
		No	2

BIBLIOGRAPHY

BIBLIOGRAPHY

Astrachan, Myrtle A. "Group Psychotherapy with Mentally Retarded Female Adolescents and Adults," American Journal of Mental Deficiency, 60 (1955), pp. 152-156.

Bottenberg, Robert A., and Ward, Joe H., Jr. Applied Multiple Linear Regression. (Lackland Air Force Base, Texas 65 70th Personnel Research Laboratory, Aerospace Medical Division, March, 1963) (PKL-TDR-63-6).

Bower, Eli M. Early Identification of Emotionally Handicapped Children in School. Springfield, Ill.: Charles Thomas, Publisher, 1960.

Broedel, John, Ohlsen, M. M. and Proff, Fred. "The Effects of Group Counseling on Gifted Adolescent Underachievers," Journal of Counseling Psychology, 7 (1960), pp. 163-170.

Caplan, Stanley W. "The Effect of Group Counseling on Junior High School Boys' Concepts of Themselves in School," Journal of Counseling Psychology, 4 (1957), pp. 124-128.

Castaneda, Alfred, McCandless, Boyd R. and Palermo, David S. "The Children's Form of The Manifest Anxiety Scale," Child Development, Vol. 27, No. 3 (September, 1956), pp. 318-326.

Clarke, Ann M., and Clarke, A. D. B. Mental Deficiency, The Changing Outlook. 2d ed. New York: The Free Press, 1965.

Cotzin, Milton. "Group Psychotherapy with Mentally Defective Problem Boys," Counseling and Psychotherapy with the Mentally Retarded, ed. Chalmers L. Stacey and Manfred F. DeMartino. Glencoe, Ill.: The Free Press, 1957.

Fisher, Louise A. and Wolfson, Isaac N. "Group Therapy of Mental Defectives," American Journal of Mental Deficiency, 57 (1953), pp. 463-476.

Froehlich, Clifford P. "Must Counseling be Individual?", Education and Psychological Measurement (in press).

Horowitz, Frances D. "The Relationship of Anxiety, Self Concept, and Sociometric Status Among Fourth, Fifth and Sixth Grade Children," Journal of Abnormal and Social Psychology, LX (1962), pp. 212-214.

Johnson, Palmer O. Statistical Methods in Research. New York: Prentice Hall, Inc., 1949.

Kaldeck, Rudolph. "Group Psychotherapy with Mentally Defective Adolescents and Adults," International Journal of Group Psychotherapy, 8 (1958), pp. 185-193.

Lipsitt, Lewis P. "A Self-Concept Scale for Children and Its Relationship to The Children's Form of the Manifest Anxiety Scale," Child Development, XXIX (1958), pp. 463-472.

McLaughlin, Edward F. "A Study of the Effectiveness of Personal Counseling with Seventh Grade Pupils," Dissertation Abstract, 16, 2089 (1956).

Mayer, C. Lamar. "A Study of the Relationship of Early Special Class Placement and the Self Concepts of Mentally Handicapped Children," Exceptional Children (October, 1966), pp. 77 81.

Mehlman, Benjamin. "Group Psychotherapy with Mentally Retarded Children," Journal of Abnormal and Social Psychology, 48 (1953), pp. 53-60.

Morris, Christopher C., Nellis, Barbera and Stromberg, Charles E. "The Development of an Inter-disciplinary Psychotherapeutic Program in an Institution for the Mentally Retarded," American Journal of Mental Deficiency, 63 (1959), pp. 605-610.

O'Connor, H., and Yonge, K. A. "Methods of Evaluating the Group Psychotherapy of Unstable Defective Delinquents," Journal of Genetic Psychology, 87 (1955), pp. 89-101.

Piers, Ellen V., and Harris, Dale B. "Age and Other Correlates of Self Concept in Children," Journal of Educational Psychology, LX (1964), pp. 91-95.

Ringelhoim, Daniel, and Polatsok, Irwin B. "Group Therapy with a Male Defective Group," American Journal of Mental Deficiency, 49 (1955), pp. 300-303.

Rogers, Carl R. Client-Centered Therapy. Boston: Houghton-Mifflin Co., 1951.

Sarason, Seymoure B. Psychological Problems in Mental Deficiency. 2d. edition New York: Harper, 1953.

Slavson, Samuel R. Introduction to Group Therapy. New York: International University Press, Inc., 1951.

Snyder, Robert, and Sechrest, Lee. "An Experimental Study of Directive Group Therapy with Defective Delinquents," American Journal of Mental Deficiency, 64 (1959), pp. 117-123.

Stubblebine, James, and Roadruck, Roscoe, D. "Treatment Program For Mentally Deficient Adolescents," American Journal of Mental Deficiency, 60 (1956), pp. 552-556.

Thorne, Frederick C. "Counseling and Psychotherapy with Mental Defectives," American Journal of Mental Deficiency, 52 (1948), pp. 263-271.

Warner, W. Floyd, Meeker, Marchia, and Eells, Kenneth. Social Class in America. New York: Harper & Row, 1960.

Wiest, Glenn K. "Psychotherapy with the Mentally Retarded," American Journal of Mental Deficiency, 59 (1955), pp. 640-644.

Wilcox, George T., and Guthrie, George M. "Changes in Adjustment of Institutionalized Female Defectives Following Group Psychotherapy," Journal of Clinical Psychology, 13 (1957), pp. 9-13.